REMARKS

Upon entry of the foregoing amendments, claims 1-45 will be pending in the present application. Claims 43 and 44 have been amended. Support for the amendments can be found in the as-filed specification at page 30, line 26 – page 31, line 23. New claim 45 has been added. Support for new claim 45 can be found in originally filed claim 43. Applicants submit that no new matter has been added to the application. Reexamination of the application and reconsideration of the rejections are respectfully requested in view of the above amendments and the following remarks, which follow the order set forth in the Office Action.

Allowable Subject Matter

The Office Action states that claims 1-42 are allowed.

Rejections under 35 U.S.C. §112

Claims 43-44 were rejected under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite. Applicants respectfully traverse. Applicants have amended claim 43 to remove the optional language regarding the evaporation device. The limitation with regard to the evaporation device is now present in new claim 45. Additionally, amendments have been made to claims 43 and 44 to conform the language of these claims to more traditional U.S. patent claim language. Applicants submit that the scope of claims 43 and 44 has not been changed in any way by such conformational amendments. With regard to amended claims 43 and 44, Applicants direct the Examiner's attention to pages 30-31 of the as-filed specification, wherein a description of the injection system including the carrier gas intake, the injection head, and the evaporation device is provided. Applicants submit that the connectivity of the elements of claims 43 and 44 is clear in view of the amendments made to the claims and the description provided in the as-filed specification. Accordingly, Applicants respectfully request reconsideration and withdrawal of the instant rejection.

Rejections under 35 U.S.C. §102

Claims 43-44 were rejected under 35 U.S.C. §102 as being anticipated by U.S. Patent No. 5,945,162 to Senateur et al., ("Senateur"). Applicants respectfully traverse because Senateur fails to disclose every limitation of amended claim 43.

Amended claim 43 recites a device for carrying out a method for preparing carbon nanotubes or nitrogen-doped carbon nanotubes. The device comprises a reaction chamber in which carbon nanotubes or nitrogen-doped carbon nanotubes are prepared by pyrolysis of a liquid containing at least one liquid hydrocarbon precursor of carbon or at least one liquid compound precursor of carbon and nitrogen consisting of carbon atoms, nitrogen atoms and optionally hydrogen atoms and/or atoms of other chemical elements, and optionally at least one metal compound precursor of a catalyst metal; means for forming said liquid under pressure into finely divided liquid particles, for conveying said finely divided particles by a carrier gas stream and for *introducing* said finely divided liquid particles into the reaction chamber; said means comprising a periodic injection system, said periodic injection system comprising an injection head *and a connection ring, said connection ring including a carrier gas intake component*.

Senateur discloses a device for introducing deposition precursors into a CVD chamber. The device comprises a pressure tank 10 for holding a liquid precursor 11 or a solution of solid precursors, and a pipe 13 for conveying the liquid precursor 11 to an injector 14, which injects the liquid precursor 11 into a deposition chamber 1. *See*, c. 4, ll. 22-36. The device further comprises a pipe 3 that introduces carrier gases into the deposition chamber. *See*, c. 4, ll. 37-39. Senateur also discloses an embodiment of the device, which is consistent with the generic description of the device, wherein the carrier gas may be introduced at an intermediate height in the deposition chamber 1 by an introduction pipe 30 to introduce double gas flow. *See*, c. 6, ll. 38-41. As can be seen in FIGS. 2 and 3, the pipe 3 and the introduction pipe 30 are separate from the injector 14, thus, the liquid precursor 11 is injected into the deposition chamber 1 separately from the carrier gas in the device of Senateur. Further, Senateur does not disclose any connection apparatus between the injector 14 and the deposition chamber 1, nor does it disclose any connection apparatus between the pipe 3 or introduction pipe 30 and the deposition chamber 1. Moreover, Senateur certainly does not disclose an injection system comprising an injection head *and* a connection ring that includes a carrier gas intake component, as required by amended claim 43. The injector 14 and pipe 3 and/or introduction pipe 30 of Senateur are separate from one another, thus it would be impossible for the liquid precursor 11 to be introduced into the deposition chamber 1 *with or by* the carrier gas, as required by amended claim 43. Given the foregoing, it is readily apparent that Senateur fails to disclose a device comprising a means for *introducing* said finely divided liquid particles into the reaction chamber with a carrier gas stream

wherein said means comprises an injection system comprising an injection head *and a connection ring that includes a carrier gas intake component*, as required by amended claim 43.

With regard to claim 44, claim 44 recites the device of claim 43 wherein a side wall of the connection ring includes at least one carrier gas intake tube, said carrier gas intake tube opening into an annular groove surrounding the injection head of the injection system, wherein the annular groove is placed behind the injection head such that the carrier gas introduced at the at least one carrier gas intake tube surrounds the finely divided liquid particles without interfering with them. As discussed above, Senateur discloses a pipe 3 and/or an introduction pipe 30 for introducing carrier gas into the deposition chamber 1 separately from the injector 14, which injects precursor liquid 11 into the deposition chamber 1. In Senateur, the carrier gas cannot interact in any way with the precursor liquid 11 until the liquid 11 has been injected into the deposition chamber 1. As such, Senateur does not disclose a device wherein the carrier gas is introduced into the injection system, which contains the injection head for injecting finely divided liquid particles into the reaction chamber, in such a way that the carrier gas "surrounds the finely divided liquid particles without interfering with them". Further, Senateur provides no disclosure of a connection ring comprising a carrier gas intake tube that opens into an annular groove surrounding the injection head of the injection system, as required by amended claim 44.

Based on the foregoing, Applicants submit that amended claims 43 and 44 are not anticipated by Senateur. As such, Applicants respectfully request reconsideration and withdrawal of the instant rejection.

Rejections under 35 U.S.C. §103

Claims 43-44 were rejected under 35 U.S.C. §103 as being obvious over Senateur. Applicants respectfully traverse.

As discussed above, Senateur only discloses embodiments of a device wherein a pipe 3 and/or an introduction pipe 30 for introducing carrier gas into the deposition chamber 1 is separate from the injector 14 that injects precursor liquid 11 into the deposition chamber 1. In fact, the introduction pipe 30 is introduced at an intermediate height in the deposition chamber, thus, it is nowhere near the injector 14. The advantages of introducing carrier gas at an intermediate height with double gas flow are discussed in Senateur and include the ability to evacuate a portion of fast evaporated solvent through the vent of the deposition

chamber. *See*, c. 6, ll. 39-53. Thus, Senateur discloses devices wherein carrier gas is introduced at locations that are separate from the location where the precursor liquid is injected and discusses the advantages of devices wherein carrier gas is introduced at such separate locations. As such, based on the disclosure of Senateur, one of ordinary skill in the art would have no reason to modify the device of Senateur to arrive at the device of amended claim 43, wherein the device comprises a means for *introducing* said finely divided liquid particles into the reaction chamber with a carrier gas stream and wherein said means comprises an injection system comprising an injection head *and a connection ring that includes a carrier gas intake component*. It is more likely that one of ordinary skill in the art would arrive at a device wherein the carrier gas is introduced at various other and/or additional locations that are separate from the location where the precursor liquid is injected. Based on the foregoing, Applicants submit that claims 43 and 44 are not obvious in view of Senateur. Accordingly, Applicants respectfully request reconsideration and withdrawal of the instant rejection.

For the foregoing reasons, claims 1-45 are considered to be allowable. A Notice to this effect is respectfully requested. If any questions remain, the Examiner is invited to contact the undersigned at the number given below.

The Director is hereby authorized to charge any appropriate fees that may be required by this paper, and to credit any overpayment, to Deposit Account No. 23-1925.

Respectfully submitted,

BRINKS HOFER GILSON & LIONE

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